

Richardson Boilers

steam
and hot
water



RICHARDSON & BOYNTON CO.

11 WEST 31st STREET, NEW YORK

CHICAGO

BOSTON

PHILADELPHIA



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“Richardson”

(Trade Mark Reg. in U. S. Pat. Office)

Steam and Hot Water

B O I L E R S

ARE SUPERIOR IN QUALITY

ECONOMICAL IN FUEL

GIVE UNIVERSAL SATISFACTION



Our works, as shown above, are so situated as to benefit by two trunk lines, which insures customers prompt shipments and efficient service to all parts of the country.

PRICE LIST
OF
"Richardson" Boilers

for :: :: ::
STEAM AND
HOT WATER
H E A T I N G

Manufactured by

Richardson & Boynton Co.

31 West 31st Street	-	-	-	-	-	NEW YORK
171-173 West Lake Street	-	-	-	-	-	CHICAGO
405 Boylston Street	-	-	-	-	-	BOSTON
1342 Arch Street	-	-	-	-	-	PHILADELPHIA

IMPORTANT FACTS

RICHARDSON" Boilers are rated according to accurate standards and upon the assumption that sufficient radiation will be used, the piping system properly arranged and the boiler connected to a flue of ample capacity and good draft. With steam at 2 lbs. boiler pressure and with hot water at a temperature of 180° Fahrenheit.

Our ratings provide that all piping (mains, risers and returns), in addition to the direct radiation to be used, shall be figured as radiating surface in estimating the size of boiler necessary. One size larger boiler for reserve power is best used.

For indirect radiation add 75 per cent. to surface for such radiation, and where pipe radiation surface is used, add 25 per cent. for same to equal the usual amount direct radiation.

When a pipe coil or cast-iron section is placed in the fire pot for heating water for domestic uses, additional capacity must be figured at the rate of $1\frac{1}{2}$ square feet of direct radiation for a steam boiler and $2\frac{1}{2}$ square feet of direct radiation for a hot-water boiler, for each gallon of water to be heated per hour.

“RICHARDSON” Boilers are tapped for coils to be placed in the fire box for heating water. Front section of side feed boilers should not be so used.

Do not bush outlets on boilers; connect all of them full size to the mains.

To secure best results boilers should be covered with Asbestos cement.

GUARANTEE

Every “RICHARDSON” Boiler is sold under a guarantee as to its perfection in manufacture, and its ability to carry the rating shown in our printed matter, provided that a sufficient amount of radiation is installed, the piping system properly run, and the boiler connected to a flue of sufficient size and draft for the size of the fire box.

COAL

“RICHARDSON” Boilers can be furnished with grates to burn the small sizes of coal when so ordered.

When soft coal is used for fuel, increase boiler one size.

“RICHARDSON”

Round Sectional Steam and Water Boilers



RICHARDSON" Round Boilers were designed to furnish a boiler adapted for small buildings and private residences, one that would be simple and easy to operate, powerful, yet economical. How well these results have been attained is shown by the many thousands in actual use. Their operation is most simple, and requires no practical knowledge. They have large feed doors for supplying fuel to the fire, and ample cleanout and ash-pit doors, and will carry sufficient fire all night to insure a warm house in early mornings.

RICHARDSON BOILERS

16 and 19 Series Round Sectional

STEAM

No.	Height to Top Outlet Inches	Nom. Diam Grate Ins.	Grate Area Sq. Ft.	Height Water Line Inches	Outlets No. and Size	Inlets No. and Size	8 Hour Ratg. Sq. Ft.	List Price Complete
161	50	16	1.40	45 $\frac{3}{8}$	2-2	2-2	250	\$124.00
162	54	16	1.40	49 $\frac{3}{8}$	2-2	2-2	275	140.00
190	47 $\frac{1}{2}$	19	1.97	42 $\frac{1}{2}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	300	148.00
191	51 $\frac{1}{2}$	19	1.97	46 $\frac{1}{2}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	350	166.00
192	55 $\frac{1}{2}$	19	1.97	50 $\frac{1}{2}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	375	185.00

WATER

161	47 $\frac{1}{2}$	16	1.40	....	2-2	2-2	400	\$114.00
162	51 $\frac{1}{2}$	16	1.40	....	2-2	2-2	425	130.00
190	45 $\frac{1}{4}$	19	1.97	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	500	138.00
191	49 $\frac{1}{4}$	19	1.97	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	575	156.00
192	53 $\frac{1}{4}$	19	1.97	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	625	175.00

Size of Smoke-pipe 16 in., 7 in.; 19 in., 8 in. For other measurements see Richardson Manual. Page 37.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	161	162	190	191	192
A—Fuel available, hard coal	68	68	98	98	98
B—Rekindling reserve	17	17	25	25	25
C—Adequate fuel charge (A+B)	85	85	123	123	123
D—Steam produced per lb. coal (evaporative power)	8.0	8.5	7.5	8.0	8.5
E—Total Steam (AxD) (Htg. power)	544	578	735	784	833
F—Area of sq. cornered chimney flue...sq. in.	64	64	64	64	64
G—Height of chimney flue	30	30	35	35	35

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	161	162	190	191	192
When A is burned in 6 hours.....	Steam 363	385	490	523	555
Equivalent capacity	Water 605	642	817	873	925
When A is burned in 8 hours.....	Steam 272	289	368	392	417
Equivalent capacity	Water 453	482	613	653	694
When A is burned in 10 hours.....	Steam 218	231	294	314	333
Equivalent capacity	Water 363	385	490	523	555
When A is burned in 12 hours.....	Steam 181	193	245	261	278
Equivalent capacity	Water 302	322	408	435	463

See Pages 4 and 5.

“RICHARDSON”

Round Sectional Steam and Water Boilers



ALL house owners are anxious to install a boiler that will generate the most heat with the least expense for fuel and with as little attention as possible. This is accomplished with the “RICHARDSON” Boilers. The deep fire chamber with corrugated sides will carry fire and generate heat a long time without attention. Over the fire is a large amount of active heating surface, properly proportioned for the rating of the boiler. This surface being backed by water, the full heat from the fire is utilized and the water quickly raised to a high temperature.

RICHARDSON BOILERS

22 and 25 Series Round Sectional

STEAM

No.	Height to Top Outlet Inches	Nom. Diam Grate Ins.	Grate Area Sq. Ft.	Height Water Line Inches	Outlets No. and Size	Inlets No. and Size	8 Hour Ratg. Sq. Ft.	List Price Complete
221	53	22	2.64	48 $\frac{1}{4}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	450	\$206.00
222	57	22	2.64	52 $\frac{1}{4}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	500	218.00
223	61	22	2.64	56 $\frac{1}{4}$	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	550	232.00
251	54 $\frac{1}{4}$	25	3.41	49 $\frac{1}{2}$	2-3	2-3	625	277.00
252	58 $\frac{1}{4}$	25	3.41	53 $\frac{1}{2}$	2-3	2-3	675	292.00
253	62 $\frac{1}{4}$	25	3.41	57 $\frac{1}{2}$	2-3	2-3	725	308.00

WATER

221	50 $\frac{1}{2}$	22	2.64	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	750	\$196.00
222	54 $\frac{1}{2}$	22	2.64	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	825	208.00
223	58 $\frac{1}{2}$	22	2.64	....	2-2 $\frac{1}{2}$	2-2 $\frac{1}{2}$	900	222.00
251	52	25	3.41	....	2-3	2-3	1025	267.00
252	56	25	3.41	....	2-3	2-3	1100	282.00
253	60	25	3.41	....	2-3	2-3	1200	298.00

Size of Smoke-pipe 22 in., 9 in.; 25 in., 10 in. For other measurements see Richardson Manual. Page 37.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	221	222	223	251	252	253
A—Fuel available, hard coal	lbs. 137	137	137	177	177	177
B—Rekindling reserve	lbs. 34	34	34	44	44	44
C—Adequate fuel charge (A+B)	lbs. 171	171	171	221	221	221
D—Steam produced per lb. coal (evaporative power)	lbs. 8.0	8.5	9.0	8.0	8.5	9.0
E—Total Steam (Ax D) (Htg. power)	lbs. 1095	1165	1233	1415	1505	1594
F—Area of sq. cornered chimney flue	sq. in. 96	96	96	96	96	96
G—Height of chimney flue	ft. 35	35	35	40	40	40

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	221	222	223	251	252	253
When A is burned in 6 hours.....	Steam 730	777	823	943	1003	1063
Equivalent capacity	Water 1216	1295	1374	1572	1670	1776
When A is burned in 8 hours.....	Steam 548	583	617	708	753	797
Equivalent capacity	Water 914	973	1026	1180	1255	1326
When A is burned in 10 hours.....	Steam 438	466	493	566	602	638
Equivalent capacity	Water 731	777	823	943	1003	1064
When A is burned in 12 hours.....	Steam 365	388	411	472	502	531
Equivalent capacity	Water 608	647	685	786	836	885

See Pages 4 and 5.

“RICHARDSON”
Round Sectional Steam and Water
Boilers



INTERIOR view of the “RICHARDSON” Round Boiler, showing corrugated inside surface of firepot, high combustion chamber and deep fire to permit of a low rate of combustion, and attendance at long intervals. The firepot section is provided with two openings in the back for inserting a coil in the fire for heating water for domestic purposes. The dome, or top section, adds greatly to the efficiency and economy of these boilers on account of the large surfaces in contact with the heated gases.

RICHARDSON BOILERS

28 Series Round Sectional

STEAM

No.	Height to Top Outlet Inches	Nom. Diam Grate Ins.	Grate Area Sq. Ft.	Height Water Line Inches	Outlets No. and Size	Inlets No. and Size	8 Hour Ratg. Sq. Ft	List Price Complete
281	55 $\frac{3}{4}$	28	4.28	51	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	875	\$355.00
282	59 $\frac{3}{4}$	28	4.28	55	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	950	372.00
283	63 $\frac{3}{4}$	28	4.28	59	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	1025	395.00

WATER

281	53 $\frac{1}{4}$	28	4.28	....	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	1350	\$345.00
282	57 $\frac{1}{4}$	28	4.28	....	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	1550	362.00
283	61 $\frac{1}{4}$	28	4.28	....	2-3 $\frac{1}{2}$	2-3 $\frac{1}{2}$	1675	385.00

Size of Smoke-pipe 10 in. For other measurements see Richardson Manual. Page 37.

Factors determining Boiler Capacities (Derived from actual tests)

No. of Boiler—Steam and Water	281	282	283
A—Fuel available, hard coal .....lbs.	273	273	273
B—Rekindling reserve .....lbs.	68	68	68
C—Adequate fuel charge (A+B) .....lbs.	341	341	341
D—Steam produced per lb. coal (evaporative power) .....lbs.	8.0	8.5	9.0
E—Total Steam (AxD) (Htg. power)....lbs.	2184	2320	2457
F—Area of sq. cornered chimney flue...sq. in.	144	144	144
G—Height of chimney flue .....ft.	50	50	50

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour.

The capacity of the Richardson Boilers as indicated in the following table, is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	281	282	283
When A is burned in 6 hours.....Steam	1455	1547	1673
Equivalent capacity .....Water	2425	2578	2808
When A is burned in 8 hours.....Steam	1092	1160	1229
Equivalent capacity.....Water	1820	1933	2050
When A is burned in 10 hours.....Steam	874	928	983
Equivalent capacity .....Water	1457	1547	1638
When A is burned in 12 hours.....Steam	728	773	819
Equivalent capacity .....Water	1213	1288	1365

See Pages 4 and 5.

“RICHARDSON”

Sectional Safety Steam and Water Boilers

21 Series—End Feed



Can be furnished with Double Feed Doors for Wood Fuel

THESE Boilers, designed for heating houses and small buildings, present to the direct rays of the fire a very large percentage of heating surface, yet with a long fire travel to hold back the gases and prevent their too-rapid escape to the smoke outlet. Direct surface is necessary to raise steam quickly or to heat water with economy of fuel. The “RICHARDSON” Boilers have deep fire pots and high combustion chambers. Grates can be furnished for burning large or small sizes of coal, as may be desired.

RICHARDSON BOILERS

21 Series End Feed Sectional

STEAM

No.	Total Length Inches	Grate Area Sq. Ft.	Water Line Inches	Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
214	36	2.27	43	1-3	22x24 $\frac{1}{2}$	425	\$210.00
215	42 $\frac{1}{4}$	3.01	43	1-3	22x30 $\frac{3}{4}$	575	252.00
216	48 $\frac{1}{2}$	3.75	43	2-3	22x37	725	317.00
217	54 $\frac{3}{4}$	4.49	43	2-3	22x43 $\frac{1}{4}$	850	355.00

Castings only. Height, 49 $\frac{1}{2}$ in. Width, 32 in.

WATER

214	36	2.27	....	2-3	22x24 $\frac{1}{2}$	700	\$200.00
215	42 $\frac{1}{4}$	3.01	....	2-3	22x30 $\frac{3}{4}$	950	242.00
216	48 $\frac{1}{2}$	3.75	....	3-3	22x37	1200	307.00
217	54 $\frac{3}{4}$	4.49	....	3-3	22x43 $\frac{1}{4}$	1400	345.00

For each outlet there are two inlets of the same size—one on each side Size of smoke-pipe, 9 in. For other measurements, see Richardson Manual. Page 39.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	214	215	216	217
A—Fuel available, hard coal	120	152	184	216
B—Rekindling reserve	30	38	46	54
C—Adequate fuel charge (A+B)	150	190	230	270
D—Steam produced per lb. coal (evaporative power)	8.0	8.0	8.0	8.0
E—Total Steam (Ax D) (Htg. power)	960	1216	1472	1728
F—Area of sq. cornered chimney flue...sq. in.	96	96	96	96
G—Height of chimney flue	35	35	40	40

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	214	215	216	217
When A is burned in 6 hours.....Steam	640	810	981	1153
Equivalent capacity	1067	1350	1635	1923
When A is burned in 8 hours.....Steam	480	608	736	864
Equivalent capacity	800	1013	1227	1440
When A is burned in 10 hours.....Steam	384	487	589	691
Equivalent capacity	640	812	982	1152
When A is burned in 12 hours.....Steam	320	405	491	576
Equivalent capacity	533	675	818	960

See Pages 4 and 5.

“RICHARDSON”

Sectional Safety Steam and Water Boilers

25 Series—End Feed



Can be furnished with Double Feed Doors for Wood Fuel

THE principal consideration in a boiler is the ease with which it can be operated—its ability to do the work for long periods—and its economic features. The proportion of grate area to do the work required to be done, large fire chamber and combustion space, together with effective direct fire surface, with large flues admitting of a low rate of combustion, all tend to make the economic boiler. These are fully realized in the “RICHARDSON” Boilers.

RICHARDSON BOILERS

25 Series End Feed Sectional

STEAM

No.	Total Length Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	* List Price Complete
255	48 $\frac{3}{4}$	4.57	48 $\frac{1}{4}$	2-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x35 $\frac{1}{2}$	925	\$377.00
256	56	5.70	48 $\frac{1}{4}$	2-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x42 $\frac{3}{4}$	1150	445.00
257	63 $\frac{1}{4}$	6.83	48 $\frac{1}{4}$	2-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x50	1375	513.00
258	70 $\frac{1}{2}$	7.97	48 $\frac{1}{4}$	2-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x57 $\frac{1}{4}$	1600	580.00

Castings only. Height, 55 in. Width, 39 in.

WATER

255	48 $\frac{3}{4}$	4.57	....	2-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x35 $\frac{1}{2}$	1525	\$367.00
256	56	5.70	....	3-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x42 $\frac{3}{4}$	1900	435.00
257	63 $\frac{1}{4}$	6.83	....	3-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x50	2275	503.00
258	70 $\frac{1}{2}$	7.97	....	3-3 $\frac{1}{2}$	27 $\frac{1}{2}$ x57 $\frac{1}{4}$	2650	570.00

*For each outlet there are two inlets of the same size, one on each side. Size of smoke-pipe, 5 section, 9 in.; 6 section, 10 in.; 7 section, 11 in.; 8 section, 12 in. For other measurements see Richardson Manual. Page 39.

Factors Determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	255	256	257	258
A—Fuel available, hard coal.....lbs.	220	274	328	382
B—Rekindling reserve.....lbs.	54	68	82	96
C—Adequate fuel charge (A+B).....lbs.	274	342	410	478
D—Steam produced per lb. coal (Evaporative power).....lbs.	8.5	8.5	8.5	8.5
E—Total steam (Ax D) (Htg power).....lbs.	1870	2330	2790	3250
F—Area of sq. cornered chimney flue...sq. in.	96	96	96	144
G—Height of chimney flue.....ft.	35	40	40	50

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the "RICHARDSON" Boilers, as indicated in the following table, is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation should be used.

To convert line E to B. t. u., multiply by 970. When the hourly heat energy is expressed in terms of B. t. u., divide same by 250 for steam, or 150 for water.

If A is burned in eight hours, divide E by 8x0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6x0.25 for that capacity.

No. of Boiler	255	256	257	258
When A is burned in 6 hours.....Steam	1246	1553	1860	2167
Equivalent capacity.....Water	2077	2589	3101	3613
When A is burned in 8 hours.....Steam	935	1165	1395	1625
Equivalent capacity.....Water	1559	1942	2325	2708
When A is burned in 10 hours.....Steam	748	932	1116	1300
Equivalent capacity.....Water	1248	1554	1860	2166
When A is burned in 12 hours.....Steam	624	777	930	1083
Equivalent capacity.....Water	1040	1295	1550	1805

“RICHARDSON”

Sectional Safety Steam and Water Boilers 35 Series—End Feed



Can be furnished with Double Feed Doors for Wood Fuel

SPECIAL care has been exercised in fitting these “RICHARDSON” Boilers with ample provision for easy firing and cleaning. The two large upper doors furnish access to the flue surface for cleaning. The fire door is wide and high, so that all parts of the fire can be easily reached, and through the slicer door, all parts of the grate can be thoroughly cleaned. The ash-pit is high and commodious for the easy removal of the ashes. These boilers are furnished with all necessary firing and cleaning tools.

RICHARDSON BOILERS

35 Series End Feed Sectional

STEAM

No.	Total Length Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
355	47 $\frac{1}{4}$	7.85	56	2-4	39x33 $\frac{1}{4}$	1800	\$640.00
356	55 $\frac{1}{2}$	9.81	56	2-4	39x41 $\frac{1}{2}$	2250	770.00
357	64	11.75	56	3-4	39x50	2700	882.00
358	72 $\frac{1}{4}$	13.70	56	3-4	39x58 $\frac{1}{4}$	3150	965.00
359	80 $\frac{1}{2}$	15.65	56	3-4	39x66 $\frac{1}{2}$	3600	1,065.00

Castings only. Height, 63 in. Width, 48 in.

WATER

355	47 $\frac{1}{4}$	7.85	....	3-4	39x33 $\frac{1}{4}$	2900	\$620.00
356	55 $\frac{1}{2}$	9.81	....	3-4	39x41 $\frac{1}{2}$	3625	750.00
357	64	11.75	....	4-4	39x50	4350	862.00
358	72 $\frac{1}{4}$	13.70	....	4-4	39x58 $\frac{1}{4}$	5075	945.00
359	80 $\frac{1}{2}$	15.65	....	5-4	39x66 $\frac{1}{2}$	5800	1,045.00

*For each outlet there are two inlets of the same size, one on each side. Size of Smoke-pipe 14 in. For other measurements see Richardson Manual. Page 39.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	355	356	357	358	359
A—Fuel available, hard coal	lbs 443	553	666	776	886
B—Rekindling reserve	lbs 111	138	167	194	222
C—Adequate fuel charge (A+B)	lbs 554	691	833	970	1108
D—Steam produced per lb. coal (evaporative power)	lbs 8.5	8.5	8.5	8.5	8.5
E—Total Steam (AxD) (Htg. power).....	lbs 3767	4700	5660	6600	7530
F—Area of sq. cornered chimney flue...sq. in.	192	256	256	256	320
G—Height of chimney flue	ft. 40	40	40	50	50

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

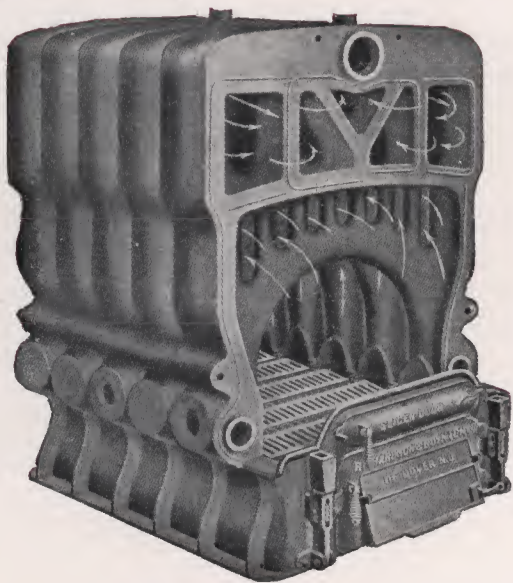
No. of Boiler	355	356	357	358	359
When A is burned in 6 hours.....	Steam 2513	3134	3775	4400	5020
Equivalent capacity	Water 4188	5220	6290	7332	8368
When A is burned in 8 hours.....	Steam 1884	2350	2830	3300	3765
Equivalent capacity	Water 3140	3916	4716	5500	6272
When A is burned in 10 hours.....	Steam 1507	1880	2264	2640	3012
Equivalent capacity	Water 2512	3134	3774	4400	5020
When A is burned in 12 hours.....	Steam 1256	1567	1887	2200	2510
Equivalent capacity	Water 2094	2611	3145	3666	4184

See Pages 4 and 5.

“RICHARDSON”

Sectional Steam and Water Boilers

42 Series—End Feed



THE leg section shows in detail the features of the “RICHARDSON” End Feed Sectional Boilers. The ample fire and combustion chamber with the low overhanging active fire surface; the thin water ways conducive to the rapid circulation of the water and the large flue spaces suitable for burning any quality of fuel. Connections between sections are made with extra heavy cast-iron slip nipples, making the boiler absolutely tight.

RICHARDSON BOILERS

42 Series End Feed Sectional

STEAM

No.	Total Length Inches	Grate Area Sq. Ft.	Water Line Inches	Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
427	64	13.82	60	2-5	45x50	3300	\$995.00
428	72 $\frac{1}{4}$	16.11	60	2-5	45x58 $\frac{1}{4}$	3850	1110.00
429	80 $\frac{1}{2}$	18.40	60	2-5	45x66 $\frac{1}{2}$	4400	1225.00
4210	88 $\frac{3}{4}$	20.69	60	3-5	45x74 $\frac{3}{4}$	4950	1340.00
4211	97	22.98	60	3-5	45x83	5500	1455.00

Castings only. Height, 66 in. Depth, 54 in.

WATER

427	64	13.82	....	3-5	45x50	5450	\$975.00
428	72 $\frac{1}{4}$	16.11	....	3-5	45x58 $\frac{1}{4}$	6350	1090.00
429	80 $\frac{1}{2}$	18.40	....	3-5	45x66 $\frac{1}{2}$	7250	1205.00
4210	88 $\frac{3}{4}$	20.69	....	4-5	45x74 $\frac{3}{4}$	8150	1320.00
4211	97	22.98	....	4-5	45x83	9050	1435.00

For each outlet there are two inlets of the same size, one on each side. Size of smoke-pipe 16 in. For other measurements see Richardson Manual. Page 40.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	427	428	429	4210	4211
A—Fuel available, hard coal	lbs. 806	940	1074	1206	1336
B—Rekindling reserve	lbs. 202	235	268	302	338
C—Adequate fuel charge (A+B)	lbs. 1008	1175	1342	1508	1674
D—Steam produced per lb. coal (evaporative power)	lbs. 8.5	8.5	8.5	8.5	8.5
E—Total Steam (AxD) (Htg. power)	lbs. 6852	7990	9130	10260	11360
F—Area of sq. cornered chimney flue ...	sq. in. 256	320	320	400	480
G—Height of chimney flue	ft. 50	50	60	60	60

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

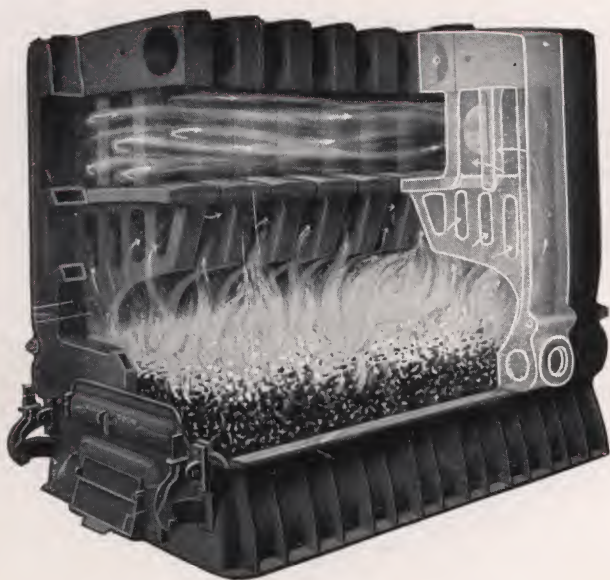
No. of Boiler	427	428	429	4210	4211
When A is burned in 6 hours.....	Steam 4579	5326	6088	6840	7570
Equivalent capacity.....	Water 7614	8880	10150	11400	12620
When A is burned in 8 hours.....	Steam 3426	3995	4565	5130	5680
Equivalent capacity.....	Water 5710	6660	7608	8550	9468
When A is burned in 10 hours.....	Steam 2741	3196	3652	4104	4544
Equivalent capacity.....	Water 4570	5328	6088	6840	7572
When A is burned in 12 hours.....	Steam 2284	2663	3043	3420	3787
Equivalent capacity.....	Water 3806	4440	5071	5700	6311

See Pages 4 and 5.

“RICHARDSON”

Sectional Steam and Water Boilers

53 Series—End Feed



RICHARDSON 50-inch grate series Sectional Steam and Hot Water Boilers, have a large amount of heating surface exposed to the action of the fire, and will consequently raise the temperature of the water quickly and generate steam, with economy of fuel. They are of similar design and construction to the 25-35-42 series which have been so popular and successful, and for convenience in erecting, are made in half sections, the two halves of the back section are connected with a yoke, furnished with the boiler.

RICHARDSON BOILERS

53 Series End Feed Sectional

STEAM

No.	Total Length Inches	Grate Area Sq. Ft.	Water Line Inches	Outlets Inches	Ashpit (Inside) Inches	6 Hour Rating Sq. Ft.	List Price Complete
536	78 $\frac{1}{4}$	18.94	70 $\frac{1}{2}$	2-6	55x55	5500	\$1,455.00
537	89	22.68	70 $\frac{1}{2}$	2-6	55x65 $\frac{3}{4}$	6575	1,665.00
538	99 $\frac{3}{4}$	26.40	70 $\frac{1}{2}$	3-6	55x76 $\frac{1}{2}$	7650	1,875.00
539	110 $\frac{1}{2}$	30.12	70 $\frac{1}{2}$	3-6	55x87 $\frac{1}{4}$	8725	2,085.00
5310	121 $\frac{1}{4}$	33.88	70 $\frac{1}{2}$	3-6	55x98	9800	2,295.00

Castings only. Height, 82 in. Width, 69 $\frac{1}{2}$ in.

WATER

536	78 $\frac{1}{4}$	18.94	....	2-6	55x55	9050	\$1,435.00
537	89	22.68	....	2-6	55x65 $\frac{3}{4}$	10825	1,645.00
538	99 $\frac{3}{4}$	26.40	....	3-6	55x76 $\frac{1}{2}$	12600	1,855.00
539	110 $\frac{1}{2}$	30.12	....	3-6	55x87 $\frac{1}{4}$	14375	2,065.00
5310	121 $\frac{1}{4}$	33.88	....	3-6	55x98	16150	2,275.00

For each outlet there are two 4-in. inlets on steam boilers—one on each side, and two 6-in. inlets on water boilers—one on each side; also two 4-in. returns in back section of each boiler. Size of smoke-pipe, 6 and 7 section, 17 in.; 8 section, 19 in.; 9 and 10 section, 21 in. For other measurements see Richardson Manual. Page 40.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	536	537	538	539	5310
A—Fuel available, hard coal.....lbs.	1022	1224	1426	1627	1828
B—Rekindling reserve.....lbs.	256	306	356	407	457
C—Adequate fuel charge (A+B).....lbs.	1278	1530	1782	2034	2285
D—Steam produced per lb. coal (evaporative power).....lbs.	8.5	8.5	8.5	8.5	8.5
E—Total Steam (Ax D) (Htg. power)....lbs.	8680	10410	12125	13830	15550
F—Area of sq. cornered chimney flue...sq. in.	576	576	576	784	784
G—Height of chimney flue.....ft.	60	70	70	70	70

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	536	537	538	539	5310
When A is burned in 4 hours.....Steam	8680	10410	12125	13830	15550
Equivalent capacity.....Water	14470	17350	20220	23060	25920
When A is burned in 6 hours.....Steam	5788	6940	8080	9220	10370
Equivalent capacity.....Water	9648	11570	13470	15370	17280
When A is burned in 8 hours.....Steam	4340	5205	6063	6915	7775
Equivalent capacity.....Water	7232	8674	10110	11540	12960
When A is burned in 10 hours.....Steam	3472	4164	4850	5532	6220
Equivalent capacity.....Water	5788	6938	8080	9220	10370

See Pages 4 and 5.

“RICHARDSON”

Sectional Safety Steam and Water Boilers

18 Series



4 and 5 Section Boilers have only one Feed Door.

PRACTICALLY all boiler manufacturers state in their catalogues that one foot of fire surface is equal in heating power to four feet of flue surface. This is an emphatic endorsement of “RICHARDSON” Boilers. These boilers have over 75 per cent direct fire surface on which the light of the fire shines. To boil water, it is placed directly over the fire, that is the reason “RICHARDSON” Boilers will generate steam or raise water to a high temperature quickly with a small amount of fuel.

RICHARDSON BOILERS

18 Series Side Feed Sectional

STEAM

No.	Total Width Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
418	37 $\frac{3}{4}$	2.63	46 $\frac{1}{2}$	1-2 $\frac{1}{2}$	22 $\frac{1}{4}$ x21 $\frac{3}{4}$	450	\$215.00
518	45	3.50	46 $\frac{1}{2}$	2-2 $\frac{1}{2}$	29 $\frac{1}{2}$ x21 $\frac{3}{4}$	550	245.00

Castings only. Height, 53 in. Depth, 40 $\frac{1}{2}$ in.

WATER

418	37 $\frac{3}{4}$	2.63	....	2-2 $\frac{1}{2}$	22 $\frac{1}{4}$ x21 $\frac{3}{4}$	725	\$205.00
518	45	3.50	....	2-2 $\frac{1}{2}$	29 $\frac{1}{2}$ x21 $\frac{3}{4}$	900	235.00

For each outlet there is a corresponding inlet at the back of boiler. Size of Smoke-pipe, 4 section, 9 in.; 5 section, 10 in. For other measurements see Richardson Manual. Page 42.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	418	518
A—Fuel available, hard coal.....lbs.	106	137
B—Rekindling reserve.....lbs.	26	34
C—Adequate fuel charge (A+B). ....lbs.	132	171
D—Steam produced per lb. coal (evaporative power).....lbs.	8.5	8.5
E—Total Steam (AxD) (Htg. power)...lbs.	901	1165
F—Area of sq. cornered chimney flue...sq. in.	96	96
G—Height of chimney flue.....ft.	35	40

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	418	518
When A is burned in 6 hours.....Steam	600	776
Equivalent capacity.....Water	1000	1294
When A is burned in 8 hours.....Steam	451	583
Equivalent capacity.....Water	752	972
When A is burned in 10 hours.....Steam	360	466
Equivalent capacity.....Water	600	777
When A is burned in 12 hours.....Steam	300	388
Equivalent capacity.....Water	500	647

See Pages 4 and 5.

“RICHARDSON” Sectional Steam and Water Boilers

22 Series



4 and 5 Section Boilers have only one Feed Door.

RICHARDSON Boilers are so constructed as to present to the fire a large percentage of direct heating surface. This surface being entirely backed by water, in thin, shallow bodies, circulates rapidly and quickly absorbs the heat units given off by the fire. But the true value of a boiler depends not alone on the amount of heating surface, but the proper proportions between grate surface and heating surface, yet with sufficient fire travel, to hold the products of combustion long enough to thoroughly extract all possible heat from the coal consumed.

RICHARDSON BOILERS

22 Series Side Feed Sectional

STEAM

No.	Total Width Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
422	37 $\frac{3}{4}$	3.21	48	1-3	22 $\frac{1}{4}$ x25 $\frac{1}{2}$	500	\$231.00
522	45	4.28	48	2-3	29 $\frac{1}{2}$ x25 $\frac{1}{2}$	675	302.00
622	52 $\frac{1}{4}$	5.35	48	2-3	36 $\frac{3}{4}$ x25 $\frac{1}{2}$	850	355.00

Castings only. Height, 55 in. Depth, 44 $\frac{1}{2}$ in.

WATER

No.	Total Width Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
422	37 $\frac{3}{4}$	3.21	....	2-3	22 $\frac{1}{4}$ x25 $\frac{1}{2}$	825	\$221.00
522	45	4.28	....	2-3	29 $\frac{1}{2}$ x25 $\frac{1}{2}$	1100	292.00
622	52 $\frac{1}{4}$	5.35	....	3-3	36 $\frac{3}{4}$ x25 $\frac{1}{2}$	1400	345.00

For each outlet there is a corresponding inlet at the back of boiler. Size of Smoke-pipe, 4 section, 9 in.; 5 and 6 section, 10 in. For other measurements see Richardson Manual. Pages 42-44.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	422	522	622
A—Fuel available, hard coal.....lbs.	131	175	218
B—Rekindling reserve.....lbs.	33	44	55
C—Adequate fuel charge (A+B).....lbs.	164	219	273
D—Steam produced per lb. coal (evaporative power).....lbs.	8.5	8.5	8.5
E—Total Steam (Ax D) (Htg. power)....lbs.	1114	1488	1853
F—Area of sq. cornered chimney flue...sq. in.	96	96	96
G—Height of chimney flue.....ft.	35	40	40

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	422	522	622
When A is burned in 6 hours.....Steam	742	992	1236
Equivalent capacity.....Water	1236	1654	2060
When A is burned in 8 hours.....Steam	557	744	927
Equivalent capacity.....Water	928	1240	1545
When A is burned in 10 hours.....Steam	446	595	741
Equivalent capacity.....Water	743	992	1235
When A is burned in 12 hours.....Steam	371	496	618
Equivalent capacity.....Water	618	827	1030

See Pages 4 and 5.

“ RICHARDSON ”

Sectional Safety Steam and Water Boilers

30 Series



4 and 5 Section Boilers have only one Feed Door.

THE value of heating surface depends upon its location. The heating surfaces in these boilers are directly over and surrounding the fire where it feels the first effect of the heat; hence their great power and economy. On larger boilers of 6, 7 and 8 sections, double feed and ash-pit doors are provided, so that every part of the fire is accessible for attention, making it easy to put on coal and remove the ashes.

RICHARDSON BOILERS

30 Series Side Feed Sectional

STEAM

No.	Total Width Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
430	37 $\frac{3}{4}$	4.38	53 $\frac{1}{2}$	1-3 $\frac{1}{2}$	22 $\frac{1}{4}$ x33 $\frac{1}{4}$	750	\$325.00
530	45	5.83	53 $\frac{1}{2}$	2-3 $\frac{1}{2}$	29 $\frac{1}{2}$ x33 $\frac{1}{4}$	1025	407.00
630	52 $\frac{1}{4}$	7.29	53 $\frac{1}{2}$	2-3 $\frac{1}{2}$	36 $\frac{3}{4}$ x33 $\frac{1}{4}$	1300	490.00
730	59 $\frac{1}{2}$	8.75	53 $\frac{1}{2}$	2-3 $\frac{1}{2}$	44 x33 $\frac{1}{4}$	1575	573.00
830	66 $\frac{3}{4}$	10.21	53 $\frac{1}{2}$	2-3 $\frac{1}{2}$	51 $\frac{1}{4}$ x33 $\frac{1}{4}$	1800	640.00

Castings only. Height, 61 in. Depth, 55 $\frac{1}{2}$ in.

WATER

No.	Total Width Inches	Grate Area Sq. Ft.	Water Line Inches	*Outlets Inches	Ashpit (Inside) Inches	8 Hour Rating Sq. Ft.	List Price Complete
430	37 $\frac{3}{4}$	4.38	....	2-3 $\frac{1}{2}$	22 $\frac{1}{4}$ x33 $\frac{1}{4}$	1250	\$315.00
530	45	5.83	....	2-3 $\frac{1}{2}$	29 $\frac{1}{2}$ x33 $\frac{1}{4}$	1700	397.00
630	52 $\frac{1}{4}$	7.29	....	3-3 $\frac{1}{2}$	36 $\frac{3}{4}$ x33 $\frac{1}{4}$	2150	480.00
730	59 $\frac{1}{2}$	8.75	....	3-3 $\frac{1}{2}$	44 x33 $\frac{1}{4}$	2600	563.00
830	66 $\frac{3}{4}$	10.21	....	3-3 $\frac{1}{2}$	51 $\frac{1}{4}$ x33 $\frac{1}{4}$	2880	630.00

For each outlet there is a corresponding inlet at the back of boiler. Size of Smoke-pipe, 4 section, 10 in.; 5 section, 12 in.; 6 section, 14 in.: 7 and 8 section, 15 in. For other measurements see Pages 42-44.

Factors determining Boiler Capacities (Derived from Actual Tests)

No. of Boiler—Steam and Water	430	530	630	730	830
A—Fuel available, hard coal.....lbs.	194	258	322	386	450
B—Rekindling reserve.....lbs.	48	64	80	97	113
C—Adequate fuel charge (A+B).....lbs.	242	322	402	483	563
D—Steam produced per lb. coal (evaporative power).....lbs.	8.5	8.5	8.5	8.5	8.5
E—Total Steam (AxD) (Htg. power)...lbs.	1650	2194	2737	3282	3825
F—Area of sq. cornered chimney flue...sq. in.	96	144	192	256	256
G—Height of chimney flue.....ft.	35	40	40	40	40

See tables in Richardson Manual regarding chimney flues. Page 80.

Method for establishing Ratings

When load attached to boiler consists of direct radiation installed in a residence for 70 degrees, the heat-condensing power of the radiation and piping combined, rarely exceeds 0.25 ($\frac{1}{4}$) lbs. of steam per sq. ft. per hour. The capacity of the Richardson Boilers as indicated in the following table is figured on this basis.

If load attached to boiler has a condensing power exceeding 0.25, such as occurs in factories and other buildings heated to a low temperature, or in which is used radiating surface having a greater condensing power, the factor representing the increased condensation, should be used.

To convert line E to B.t.u., multiply by 970. When the hourly heat energy is expressed in terms of B.t.u., divide same by 250 for steam, or 150 for water.

If A is burned in 8 hours, divide E by 8 x 0.25 to obtain the capacity at that rate. If A is burned in 6 hours, divide E by 6 x 0.25 for that capacity.

No. of Boiler	430	530	630	730	830
When A is burned in 6 hours.....Steam	1100	1462	1824	2188	2550
Equivalent capacity.....Water	1834	2436	3040	3650	4250
When A is burned in 8 hours.....Steam	825	1097	1369	1641	1913
Equivalent capacity.....Water	1375	1828	2283	2736	3190
When A is burned in 10 hours.....Steam	660	878	1095	1313	1530
Equivalent capacity.....Water	1100	1463	1826	2190	2550
When A is burned in 12 hours.....Steam	550	731	912	1094	1275
Equivalent capacity.....Water	917	1218	1520	1825	2125

See Pages 4 and 5.

“RICHARDSON”

TANK HEATER

RATINGS

The capacities in gallons shown for the different styles of hot water **Tank Heaters** indicate the size of storage tank to which heater should be connected for ordinary domestic supply systems; and heaters have the capacity to impart from 25 to 40 degrees of heat per hour to the water, which fulfills the requirements of such systems.

Where a specific quantity of water is required to be raised to a certain number of degrees per hour for special purposes, the boiler capacity required must be figured as follows:

Multiply the number of gallons to be heated per hour by $8\frac{1}{3}$ lbs., which is the weight of one gallon of water, and this result by the number of degrees temperature water is to be raised; divide this result by 8,000 (the heat units utilized from one pound of fuel), and the result will be the number of pounds of coal which must be burned per hour; this divided by the rate of combustion at which the boiler is to be run, will give the square feet of grate required. Example: What size boiler will be required to heat a swimming pool containing 2,000 gallons from 40 to 70 degrees in 4 hours? 2,000 gallons to be heated in 4 hours is equal to 500 gallons per hour. 500 multiplied by $8\frac{1}{3}$ equals 4,170 lbs. of water which, multiplied by 30 (which is the number of degrees the water is to be raised), equals 125,100 heat units required to raise 500 gallons of water 30 degrees in one hour. As 8,000 units is the value which can be utilized from one pound of fuel, 125,100 divided by 8,000 B. T. U. equals 16, which is the pounds of coal to be burned per hour, and burning 6 pounds of coal per square foot of grate would require a heater with $2\frac{2}{3}$ square feet of grate surface.

Important

When water heaters are subject to an unusual pressure or when the pressure is increased in the night, or during fires, it is necessary to provide the system with a water pressure-reducing valve and relief valve.

“RICHARDSON”

Hot Water and Tank Heaters



Nos. 110, 112, 114



Nos. 116, 118, 120

See Tank Heater Price List

SIZE	Capacity in Gallons of Water	Capacity in Square Feet of Radiation	Diameter of Grates— Inches	Tappings —Flow and Return —Inches	Height Inches	Smoke Pipe
110	150	115	10	1 ½	35 ¾	6
112	250	200	12	2	37	6
114	350	280	14	2 ½	38 ½	6
116	475	380	16	2 ½	43 ¾	7
118	600	480	18	3	44 ¼	8
120	725	580	20	3	44 ½	9

The three small sizes can be furnished with **Brass Water Sections** when desired.

See Page 28.

“ RICHARDSON ” Hot Water Tank and Laundry Heater with Square Top

Also made with Round Top with
One Boiler Hole

Size	Boiler	Radiation
2 for	90-gallon—	60 feet
5 “	200- “	150 “

No. 2—24½ inches high
No. 5—29 “ “

Will heat 24 flat irons
Top surface 27¾ x 27¾ inches



Hot Water Tank Heaters



No. 125, 110 gal. capacity

Height 35 inches
Grate 12 inches
Smoke pipe 6 inches
One size only

A course of fire brick under Water Section prevents ashes and dead coal from coming in contact with heating surface, insuring maximum efficiency.

Fitted with high ash pit and “Perfect” revolving grate.

Also furnished with Brass Water Sections

See Page 28.

“RICHARDSON”

Hot Water Laundry Heater

No. **23T**, 23 inches high for 80 gallons

No. **24**, 26 inches high for 100 gallons

Top 24 x 16 inches

Grate 10½ inches

Smoke pipe 6 inches

1-inch flow and return tapping

Fitted with high ash pit and “Perfect” revolving grate bars.



Hot Water Laundry and Tank Heaters



Size **60**, 32 inches high for 60-gallon boiler

Size **80**, 35 inches high for 80-gallon boiler

Top 24 x 15 inches

Grate 12 inches

Smoke pipe 6 inches

1-inch flow and return tapping

Fitted with high ash pit and “Perfect” revolving grate bars



Union Heater

Size **1** for 40-gallon boiler.

Top 14¼ x 21.

Height 23¾ inches

Can also be furnished with Brass Water Sections
when desired

See Page 28.

Asbestos Covering

The following is a list of the amount of Asbestos Cement required to cover $1\frac{1}{4}$ inch thick the different sizes of "RICHARDSON" Boilers.

Sectional Steam and Water		Sectional Steam and Water	
		428	600 lbs.
		429	650
418	175 lbs.	4210	700
422	200	4211	750
518	200	536	800
522	225	537	900
430	250	538	1000
622	250	539	1100
530	300	5310	1200
630	350		
730	400	Round Steam and Water	
830	450	161	100 lbs.
214	200	162	125
215	225	190	125
216	250	191	150
217	275	192	150
255	300	221	175
256	350	222	200
257	400	223	200
258	450	251	225
355	400	252	225
356	450	253	250
357	500	281	250
358	550	282	250
359	600	283	275
427	550		

